OWC™

Mercury Rack Pro mini-SAS

User Guide & Owners Manual

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1 INTRODUCTION

1.1 System Requirements

1.1.1 Mac Requirements

Dependent on the interface card you purchase to use with this solution. Please check the specifications of the controller card to determine system requirements.

1.1.2 PC Requirements

Dependent on the interface card you purchase to use with this solution. Please check the specifications of the controller card to determine system requirements.

1.1.3 Supported Drives

•Up to 4 3.5" SATA or SAS drives (1.5Gb/s, 3.0Gb/s, or 6.0Gb/s)
•40GB - 3.0TB per HDD
•Drives of identical capacity / model are required for RAID configurations

1.2 Package Contents

Item

① Power cable
② Rack Mounting Handles
③ Desktop Mounting Feet
④ Screws for Rack / Desktop Conversion
⑤ Software CD Bundle *(solutions only)*
⑥ User Guide & Owner's Manual

1.3 About This Manual

Firmware, images, and descriptions may vary slightly between this manual and the unit shipped. Functions and features may change depending on the firmware version. Please visit the product webpage for the most recent specifications.

1.4 Rear View & Cable Connections

Cable Connections:

1. Plug the power cable into the wall and into the OWC Mercury Rack Pro.
2. Verify that the voltage switch is set properly for your country.
3. Connect your external mini-SAS cable to your external mini-SAS controller card. (neither are included)

1.5 Front View & LED Indicators

1.5.1 LED Indicators

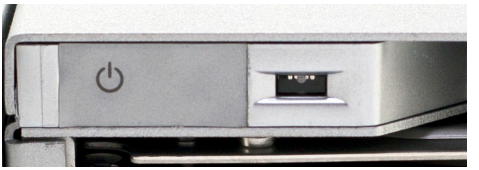
Each drive by has a multicolor LED indicator.

Power:
• Off = Power off
• Blue = Power on (all 4 drive bays)

Access:
• Flashing Red = Drive being accessed

Rebuild:
• Blinking red = Rebuilding RAID array
• Solid Red = Faulty drive

Power On/Off button
is inside the front door on the left side.



1.6 RAID Modes

The OWC Mercury Rack Pro mini-SAS does not have any RAID functions built in; however most RAID cards you will choose to use with the OWC Mercury Rack Pro mini-SAS will. These definitions of different RAID modes are provided to help you decide which mode is best for you to use.

1.6.1 Combine

The drives show up as one large single volume. The total size will depend on the drives installed, you can use drives of different capacities. Combining is an array (not RAID) that is written sequentially to, across the hard drives. By itself, it does not provide any performance or redundancy benefits.

1.6.2 Disk Striping (RAID 0)

The drives show up as one large (single) volume. It is highly recommended to use identical hard drives for this RAID method. However, you can utilize drives of different capacity, but realize that the RAID size will be based on the smallest capacity total of the drives used in the RAID set.

Used when speed is the primary objective but RAID Level 0 (also called "striping") is not redundant. This array splits each piece of data across the drives in segments. Since data is written without parity data-checking, it allows for the fastest data transfer rates, but if one drive fails, the whole array can become corrupted.

1.6.3 Disk Mirroring (RAID 1, only 2 drives installed)

The drives show up as one volume, but only 50% of the total capacity can be used. It is highly recommended to use identical hard drives for this RAID method. However, while you can utilize drives of different capacity, the RAID size will be based on the smallest capacity total of the drives used in the RAID set. RAID 1 creates an exact copy (or "mirror") of a set of data on the second drive. This is useful when reliability and backup are more important than capacity. When one drive fails, it can be replaced and the data rebuilt.

1.6.4 Disk Mirroring with Striping (RAID 10) (also known as RAID 1+0)

The drives show up as one volume, but only 50% of the total capacity can be used, depending on the drive with the smallest capacity. RAID 10 creates an exact copy (or "mirror") of a set of data but also uses a RAID 0 Stripe for speed. When one hard drive fails, it can be replaced and the data rebuilt automatically.

1.6.5 Disk Striping with dedicated parity (RAID 3)

The drives show up as one volume, but the total capacity, depending on the drive with the smallest capacity, is the combined size minus the size of one drive. RAID 3 uses byte level striping with parity data located on 1 disk. Very fast performance can be achieved with RAID 3.

1.6.6 Disk Striping with distributed parity (RAID 5)

The drives show up as one volume, but the total capacity, depending on the drive with the smallest capacity, is the combined size minus the size of one drive. RAID 5 uses block level striping with parity data distributed across all member disks and therefore provides the perfect balance between high performance and data integrity. When one hard drive fails, it can be replaced and the data rebuilt automatically.

1.6.7 Clear RAID Mode (also known as Independent)

Each drive will appear as a single volume. If you wish to use a mixed variety of capacity and model hard drives, this is the mode to use.

NOTE:
Hard drives of identical model are required for all RAID types.

2 SYSTEM SETUP

2.1 Drive Installation

NOTE: If you purchased a preconfigured solution with drives, they will be numbered for proper installation in individual drive bays. Please match the drive bay numbers to the hard drives and their trays.

To install your own drive mechanisms:

1. Open the front door on the OWC Mercury Rack Pro.

2. Install the hard drive as shown to the left, with the SATA connector facing away from you.

3. Slide the drive all the way into the drive bay. It will fit flush with the aluminum frame.

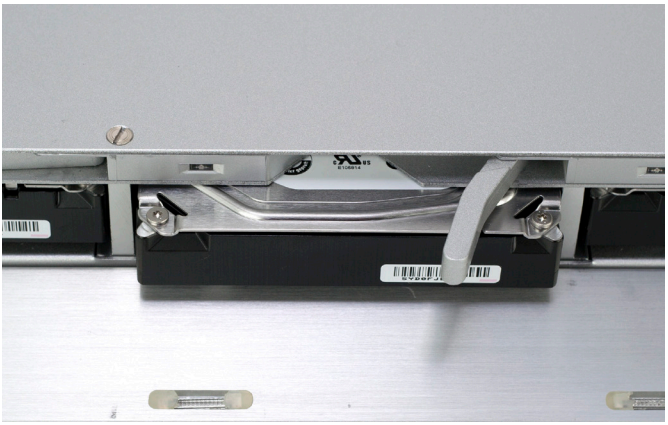
4. Repeat the previous steps for each hard drive you are installing.

NOTE: Be careful to not damage any components, and do not force the drives into place. If they don't slide in easily, make sure there are no obstructions.

IMPORTANT:

In most cases, is not possible to add more drives to an existing RAID array or change the RAID configuration without reformatting. This will depend on your controller card and the operating system that you are using. Some cards support OLE and ORLM on the Windows platform. Check your controller card manual for more information.

2.2 Replacing Drives



If one of the drives fail, the corresponding activity LED will light up solid red If only one drive is defective and your controller card's RAID mode is set to RAID 1, RAID 3, RAID 5, or RAID 10, the data can still be accessed, but we strongly suggest that you replace the faulty drive mechanism immediately to assure continued backup and data safety. To remove the hard drive from the enclosure, simply use the flip lever located above the hard drive to eject the drive mechanism.

If more than one drive fails at the same time, or if one drive fails and your controller card's RAID mode is not set to a mode with redundancy, data will be lost.

1. Check the Drive LED and replace the faulty drive. The red LED indicates the defective hard drive. Depending on the controller card you are using, the power may need to be turned off - check your controller card manual to confirm this. You may be able to leave the RAID powered on.

2. After replacing the defective drive, power on the OWC Mercury Rack Pro (if necessary).

3. Using the RAID controller card managment software, follow the instructions there or within the RAID controller card manual to proceed with the rebuild process. Depending on the card you are using, this may be automatic.

NOTE: Combined drives or independent drives can have the data from the good drives recovered in most cases.

2.3 Connections to Computer

1. Plug the power cable into the wall and into the OWC Mercury Rack Pro.
2. Verify the voltage switch is set properly for the country you reside in.
3. Connect the mini-SAS port to your controller card.

If sold as a preconfigured solution, your OWC Mercury Rack Pro is preset as a RAID 5, using the "Mac OS Extended" format and is ready to use. If you want to change this configuration, please follow the instructions in Chapter 3 to do so.

A few precautions and notes when using your external storage device:

- Do not expose the product to water or humid conditions.
- Do not cover the enclosure's ventilation holes.
- Before connecting the device to your computer, install the hard drives.
- For the safe removal of your drive and to assure that no data is lost, always eject or unmount the drive from your operating system before powering off.
- In order for the computer to access volumes larger than 2TB, both the hardware and Operating System need to support large volumes (e.g.: Windows Vista 32bit/64bit or Mac OS X 10.4 and above).

2.4 Converting to Desktop Unit

The OWC Mercury Rack Pro can be converted from a rack mounting enclosure to a desktop unit by removing the rack pulls from the sides of the enclosure, and attaching the included rubber feet to the enclosure.

To remove the rack pulls, simply remove the 4 Phillips screws on the side of the rack and the rack pull will come off.

Once you have removed the rack pulls, turn the OWC Mercury Rack Pro over and attach the 4 rubber feet using a Phillips scredriver to the bottom of the enclsure.

3 FORMATTING

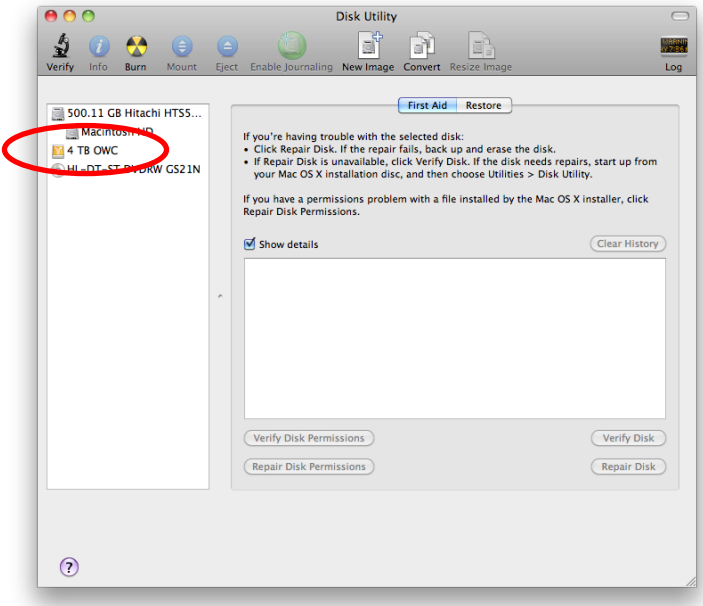
3.1 Formatting your OWC Mercury Rack Pro on a Macintosh with Mac OS X

IMPORTANT NOTE: This procedure will erase all data on your hard disk drives in the OWC Mercury Rack Pro. Back up any important data before proceeding!

①

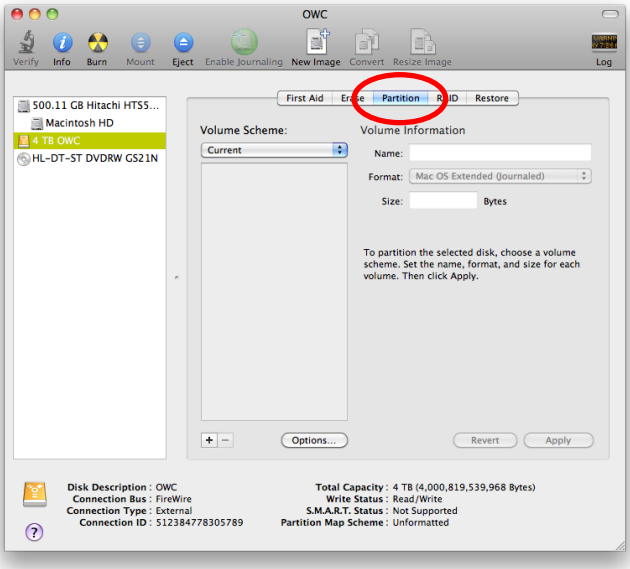
Click on the "Initialize" button.

②


Disk Utility
Verify
Info
Burn
Mount
Eject
Enable Journaling
New Image
Convert
Resize Image
Log
500.11 GB Hitachi HTS5...
Macintosh HD
4 TB OWC
HL-DT-ST DVDRW GS21N
First Aid
Restore
If you're having trouble with the selected disk:
• Click Repair Disk. If the repair fails, back up and erase the disk.
• If Repair Disk is unavailable, click Verify Disk. If the disk needs repairs, start up from your Mac OS X installation disc, and then choose Utilities > Disk Utility.
If you have a permissions problem with a file installed by the Mac OS X installer, click Repair Disk Permissions.
Show details
Clear History
Verify Disk Permissions
Verify Disk
Repair Disk Permissions
Repair Disk

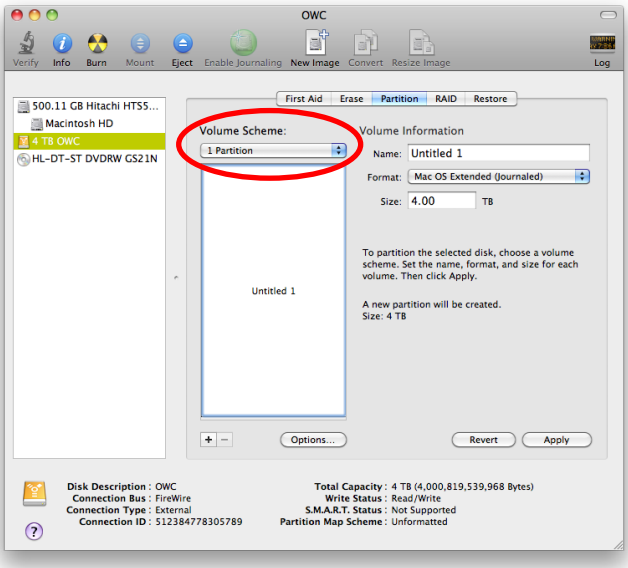
Select the device with no volumes attached to it; in this picture, that would be the 4 TB OWC device. Click on the picture of the drive icon next to the text.

③



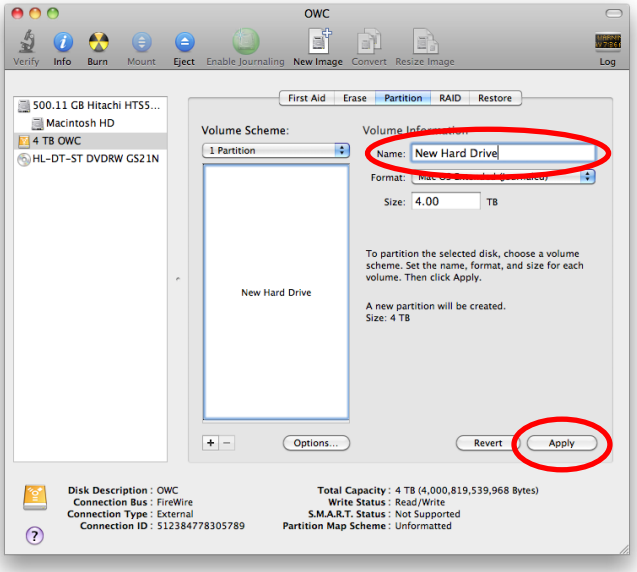
Once you've selected the OWC device, you will notice the above change in the Disk Utility application. Click on the "Partition" tab in this picture.

④



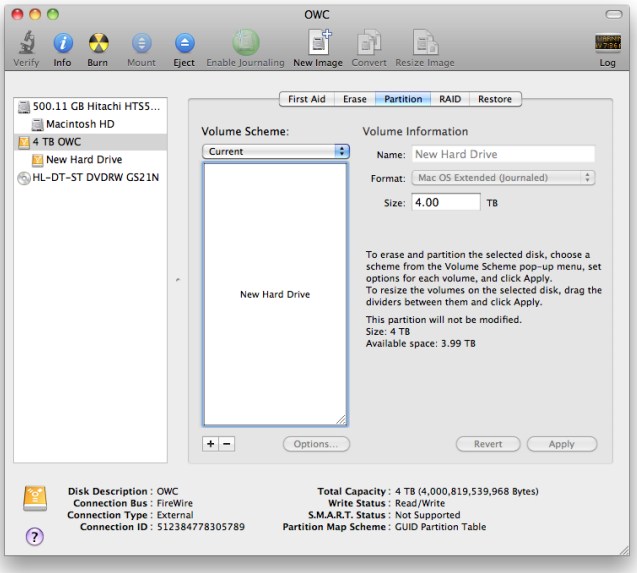
You then need to choose how many partitions you wish your OWC Mercury Rack Pro to have. For ease of use we're selecting one partition here but of course you could select more if you wish to have multiple volumes created. Simply use the pulldown menu under Volume Scheme to create more partitions.

⑤



Choose a name for the volume. You will need to repeat this step for each volume if you selected multiple partitions. Click Apply to finish.

⑥



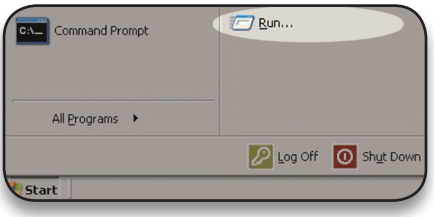
After a few moments, partitioning will complete and the OWC Mercury Rack Pro volume will mount on your desktop. You can quit Disk Utility, you're all set!

3.2 Removing the GUID Partition Scheme

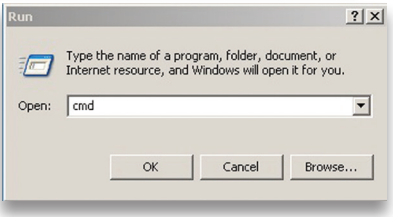
Only for XP, 2000, ME and earlier. (XP 64-BIT, Vista & Windows 7 can continue to the next section)

If you purchased a preconfigured solution from OWC, it comes preformatted using the Mac OS HFS+ file system on a GUID drive partition. Unfortunately, this is not readable by Windows without special software. If you wish to use your storage solution on a computer running Windows, you will need to repartition and reformat using the following instructions.

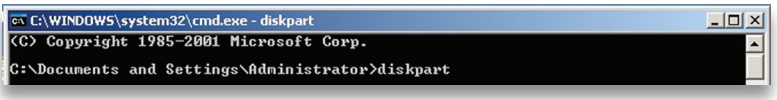
① Go to the DOS command prompt by selecting "Run" from the Start Menu.



② Type in **cmd** in text box, and hit the"OK" button.



③ Type **diskpart** and hit enter.



④ Type **list disk** and hit enter.

⑤ Type **select disk *x*** replacing *x* with the number of the disk you want to reformat. (Typically, you will see an asterisk (*) under "GPT" for the disk requiring formatting.)

WARNING: The **clean** command will destroy ALL data on the disk you run it on!!!
Be sure there is **nothing** you need to keep on your drive before running any of these commands.

⑥ Type **clean** and hit enter.

⑦ Type **exit** and hit enter.

⑧ Close the command prompt window. **You may now proceed with formatting the drive.**

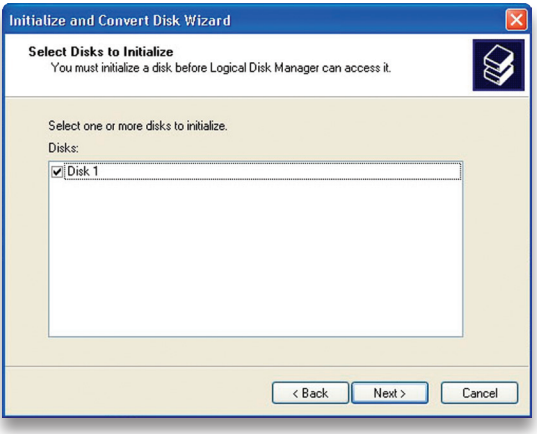
3.3 Formatting your OWC Mercury Rack Pro on Windows 2000 and later

Instructions for other operating systems can be found at http://www.macsales.com/format.

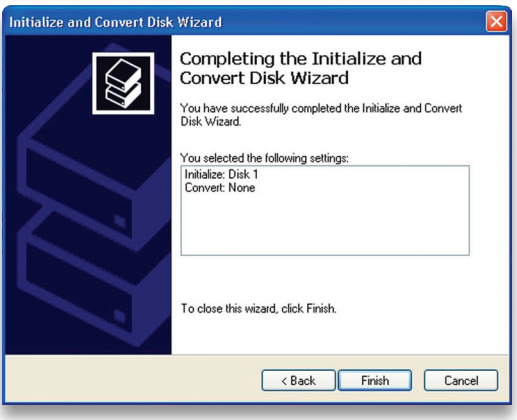
① With the drive connected to the computer and powered on, right click on the "My Computer" icon and select "Manage" from the menu. The "Initialize and Convert Disk Wizard" window should appear.

If the Wizard does not appear, expand the Storage menu by clicking on the plus (+) sign. Then, right click next to the disk number of the drive that you have just connected and click Initialize to bring up the Wizard.

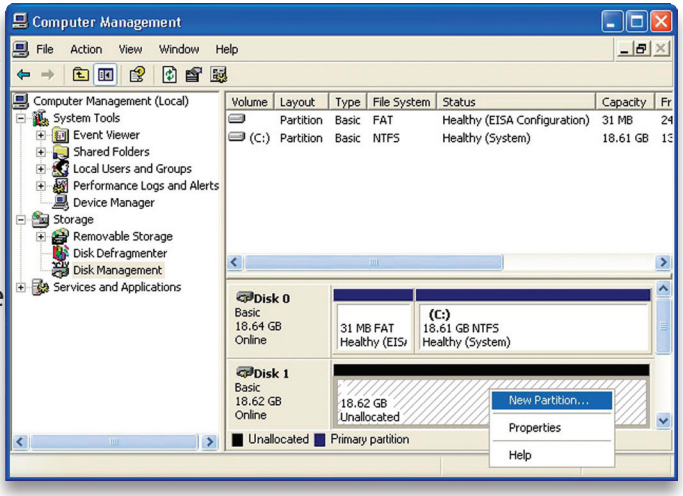
② In the next window, there should be only one drive listed. That will be the drive that you connected via eSATA, FireWire or USB. Make sure the box next to the drive name is checked and click "Next."


Initialize and Convert Disk Wizard
Select Disks to Initialize
You must initialize a disk before Logical Disk Manager can access it.
Select one or more disks to initialize.
Disks:
Disk 1
< Back
Next >
Cancel

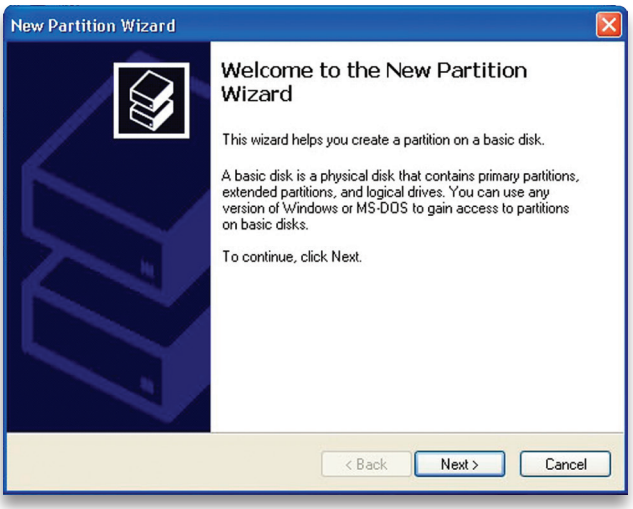
③ The Wizard will perform its tasks, and you will get the following screen. You may click "Finish."


Initialize and Convert Disk Wizard
Completing the Initialize and Convert Disk Wizard
You have successfully completed the Initialize and Convert Disk Wizard.
You selected the following settings:
Initialize: Disk 1
Convert: None
To close this wizard, click Finish.
< Back
Finish
Cancel

④ Your drive will appear similar to how Disk 1 does below. Notice that the space on the lower right reads as "Unallocated." Right click in this space and choose "New Partition."

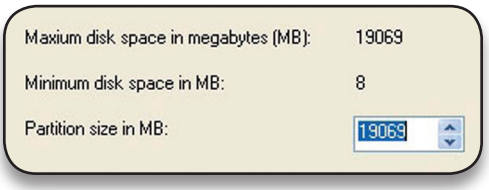


⑤ The "New Partition Wizard" will launch. Click "Next" to continue.

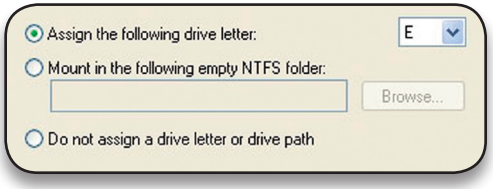

New Partition Wizard
Welcome to the New Partition Wizard
This wizard helps you create a partition on a basic disk.
A basic disk is a physical disk that contains primary partitions, extended partitions, and logical drives. You can use any version of Windows or MS-DOS to gain access to partitions on basic disks.
To continue, click Next.
< Back
Next >
Cancel

⑥ Specify your partition type as "Primary," and click "Next."

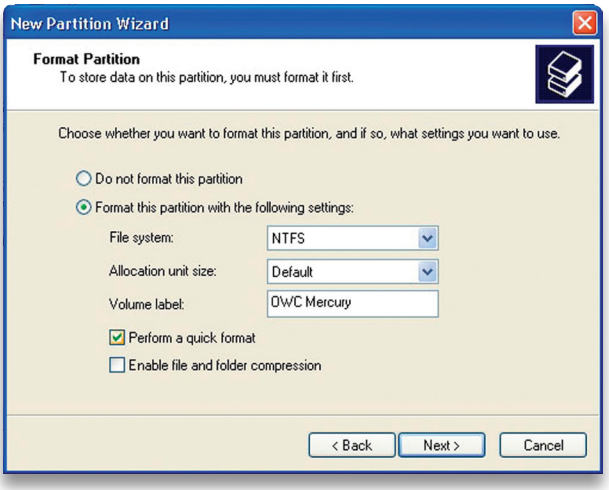
⑦ The wizard will display the maximum partition size for your drive. It is strongly recommended that you **do not** change the default value. Click "Next"



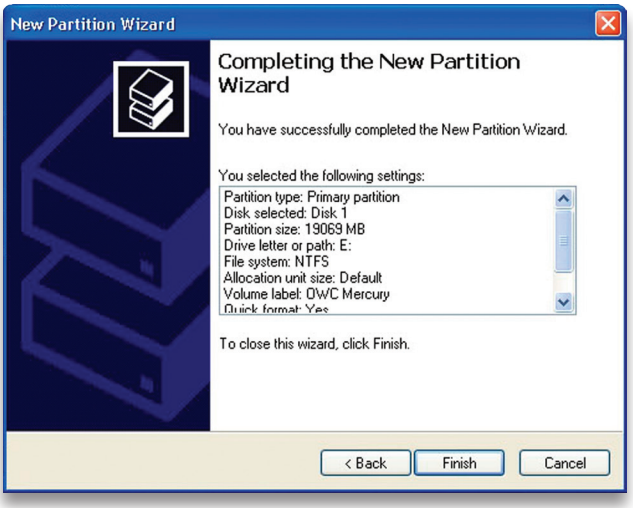
⑧ If you like, you can specify the drive letter designation for your new drive. Otherwise, one will automatically be assigned. Click "Next."


Assign the following drive letter:
E
Mount in the following empty NTFS folder:
Browse...
Do not assign a drive letter or drive path

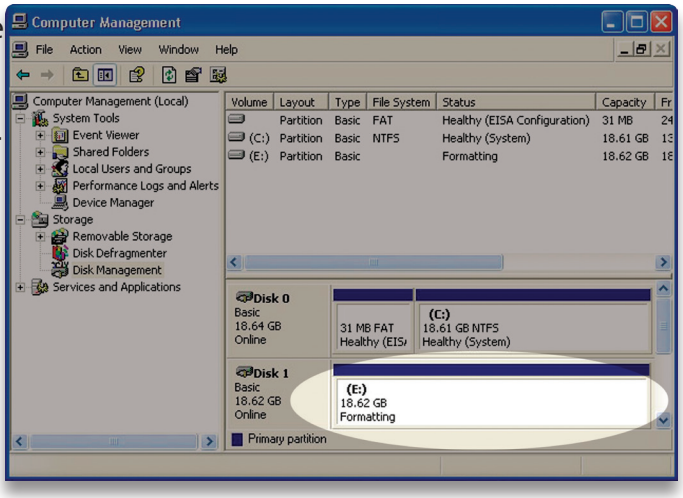
⑨ Before you can use the drive, it must be formatted. On most systems running Windows 2000 or later, it is advisable to specify the file system as NTFS. Leave the Allocation unit size as "Default," and feel free to give the drive whatever name you prefer. Be sure to check the box "Perform a quick format". If you do not, it will likely take several hours for your drive to format. Click "Next."


New Partition Wizard
Format Partition
To store data on this partition, you must format it first.
Choose whether you want to format this partition, and if so, what settings you want to use.
Do not format this partition
Format this partition with the following settings:
File system:
NTFS
Allocation unit size:
Default
Volume label:
OWC Mercury
Perform a quick format
Enable file and folder compression
< Back
Next >
Cancel

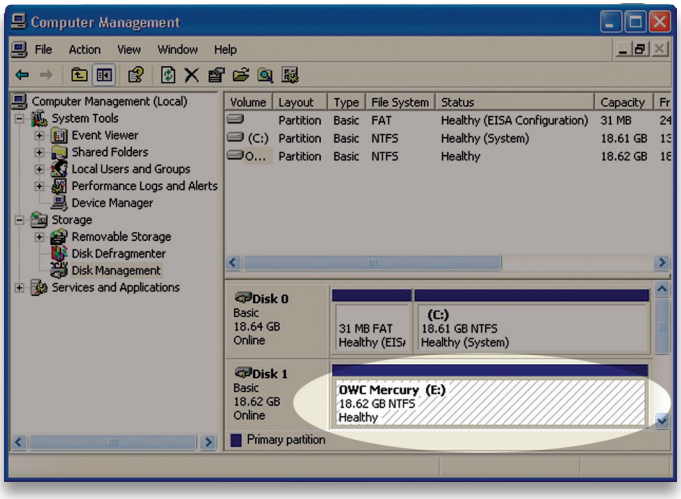
⑩ At the end of the Wizard, you will see a summary of the information that you specified during the previous steps. Click "Finish."



①① Once you have finished with the formatting wizard, you will see that your new drive (represented as "Disk E" in this case) will display a message of "Formatting." This should only take a couple of minutes if you chose the quick format option.



①② After a moment or two, the drive's status will change from "Formatting" to "Healthy."



①③ At this point, you may close the Computer Management window. Your drive is ready to use and can be found in "My Computer."

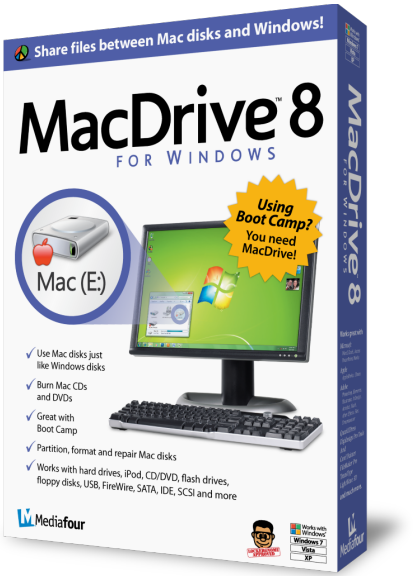
Using your new Storage Solution on both Macs and PCs?

MacDrive takes the guesswork out of sharing files. Whether you are transferring files between home and the office, a class room lab and your dorm room or even on the same computer, MacDrive makes it painless.

In fact, you'll hardly know MacDrive is working. Once installed MacDrive will automatically give you access to any Mac disk you pop into your computer. MacDrive even puts an "apple" icon on the Mac disk, just to keep things clear.

You can access files on the Mac disk just like you would with a Windows formatted disk. Open files from the disk or from within a program. Mac files automatically get the right icons and file name extensions under both Windows and Mac OS. Works great with software from Microsoft, Adobe, Quark, FileMaker, Avid, Digidesign, Corel, NewTek and more.

You can find MacDrive 8 at:
http://eshop.macsales.com/search/macdrive


Share files between Mac disks and Windows!
MacDrive 8
FOR WINDOWS
Mac (E:)
Using Boot Camp? You need MacDrive!
Use Mac disks just like Windows disks
Burn Mac CDs and DVDs
Great with Boot Camp
Partition, format and repair Mac disks
Works with hard drives, iPod, CD/DVD, flash drives, floppy disks, USB, FireWire, SATA, IDE, SCSI and more
Mediafour

4 TROUBLESHOOTING & TIPS

4.1 Troubleshooting

Some of the most simple problems can be traced to power, or connectivity issues.

Begin your troubleshooting by verifying that power is plugged into the external storage solution, and if connected to a power strip. Make sure that the power is turned on at the switch on the strip.

Then, simply verify that your cables (both ends!) are properly plugged into the computer and storage soltion.

You may want to review the manual for your controller card and use it's managment functions to verify the status of the hard drives.

4.2 Tips

To properly dismount any connected drives from your computer, you need to follow a few simple steps.

• For Macintosh systems:

There are two methods to umount disks with Macintosh systems. Either drag the icon for the hard disk you wish to dismount to the trash can, or iclick the eject icon next to the hard disk name in under the "DEVICES" tab in the sidebar in any finder window.

• For Windows systems:

1. Go to the System Tray (located in the lower right corner of yoru screen). Click on the Eject icon (a small green arrow over a hardware image).
2. A message will appear, detailing the devices that the Eject icon controls. i.e. "Safely remove..." Click on this prompt.
3. You will then be given the following message. "Safe to Remove Hardware". It is now safe to disconnect the OWC Mercury Rack Pro.

5 APPENDIX

5.1 FAQ

Q: How do I format my storage solution?
A: OWC has detailed instructions online for most popular operating systems, located at: **http://eshop.macsales.com/tech_center/formatting.cfm**

Q: What file system should I choose when formatting my drive?
A: This will depend on how you want to use the drive, but in general, we recommend:
• Mac OS X - HFS + (Mac OS Extended)
• Windows 2000/XP/Vista
• For cross-platform compatibility, FAT32 is compatible, but single file sizes are limited to 4GB. Other options using 3rd party software exist but are not covered here.

Q: Why does my solution not show up on my computer when using Windows 2000 / XP, or show up only a portion of my total capacity?
A: Since Windows 2000 and XP 32 bit use Master Boot Record, the operating system limits you to a maximum of 2TB .

Q: How many drives can fail before I lose my data?
A: This depends on the RAID mode. For RAID 0 and SPAN, any drive failure will result in the data being lost. For RAID 1, RAID 3, RAID 5, and RAID 10, the failure of two or more hard drives at the same time will mean that data cannot be recovered.

Q: Will the hard drives spin down when my computer goes into to sleep or stand-by mode?
A: Yes, they will spin down to save energy. It will take about 15 to 30 seconds to access your data after being in sleep or stand-by mode depending on your controller card.

Q: Why does the LED indicator for some of the drives light up red?
A: If one of the drive LEDs lights up red, the drive is defective. You need to replace that drive as soon as possible.

5.2 About Data Backup

To ensure that your files are protected and to prevent the loss of your data, we strongly suggest that you keep two copies of your data: One copy on your OWC Mercury Rack Pro and a second copy on either your internal hard drive or another storage medium, such as an optical backup, or on a second external hard drive. Any data loss or corruption while using the OWC Mercury Rack Pro is the sole responsibility of the user, and under no circumstances will Other World Computing be held liable for compensation or the recovery of any lost data.

6 CUSTOMER SERVICE

6.1 Before Contacting Customer Service

•Read this manual and review Chapter 4: Troubleshooting & Tips.

•Visit our tech center for more support suggestions, including FAQs.
http://eshop.macsales.com/tech_center

If you still need support, please have the following available to you:
• The serial number of the enclosure
• Your invoice number
• What operating system you are using
• Which kind and model of computer you are using

All of this will help speed your support contact along.

6.2 Support Hours Of Operation

8AM - 10PM CST Monday - Friday
9AM - 4PM CST Saturday

By Telephone - (800) 275-4576 (North America only)
International customers please call (815) 338-8685

Live Chat is available 24 hours a day, 7 days a week. Visit:
http://eshop.macsales.com for more information.

Or, you can email. Submit your email at
http://eshop.macsales.com/Service/Tech.cfm

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FCC Statement:
Warning! Modifications not authorized by the manufacturer may void the user's authority to operate this device.
NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference with radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.
NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference with radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
• Reorient or relocate the receiving antenna.
• Increase the separation between the equipment and receiver.
• Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
Health And Safety Precautions:
• Use proper anti-static precautions while performing the installation of your hard drives into this drive enclosure. Failure to do so can cause damage to your drive mechanisms, and / or the hard drive enclosure.
• Read this User's Guide carefully, and follow the correct procedure when setting up the device.
• Do not open your hard drive or attempt to disassemble or modify it. Never insert any metallic object into the drive to avoid any risk of electrical shock, fire, short-circuiting or dangerous emissions. Your hard drive contains no user-serviceable parts. If it appears to be malfunctioning, have it inspected by a qualified Other World Computing Technical Support representative.
• Never expose your device to rain, or use it near water, or in damp or wet conditions. Never place objects containing liquids on the drive, as they may spill into its openings. Doing so increases the risk of electrical shock, short-circuiting, fire or personal injury.
General Use Precautions:
• Do not expose the enclosure to temperatures outside the range of 5° C to 40° C (41° F to 104° F). Doing so may damage the drive or disfigure its casing. Avoid placing your drive near a source of heat or exposing it to sunlight (even through a window). Conversely, placing your drive in an environment that is too cold or humid may damage the unit.
• Always unplug the hard drive from the electrical outlet if there is a risk of lightning or if it will be unused for an extended period of time. Otherwise, there is an increased risk of electrical shock, short-circuiting or fire.
• Use only the power supply shipped with the device.
• Do not use the hard drive near other electrical appliances such as televisions, radios or speakers. Doing so may cause interference which will adversely affect the operation of the other products.
• Do not place the drive near sources of magnetic interference, such as computer displays, televisions or speakers. Magnetic interference can affect the operation and stability of your hard drive.
• Do not place heavy objects on top of the drive.
• If you detect a problem, consult the Troubleshooting section in this manual.
• Protect your hard drive from excessive exposure to dust during use or storage. Dust can build up inside the device, increasing the risk of damage or malfunction.
• Other World Computing recommends the use of normal glass cleaning products to keep the high lustre finish at its finest with this product. Be sure not to get any moisture inside the holes and if you do, allow time to air dry before use.
• Do not block the ventilation outlets on the rear of the drive. These help to keep your drive cool during operation. Blocking the ventilation outlets may cause damage to your drive and cause an increased risk of short-circuiting or fire.

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